



*CD FY08 Tactical Plan Status*

# **FY08 Tactical Plan Status Report for Lower Storage (Enstore)**

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# FY08 Tactical Plan for Lower Storage



- *Relevant Strategic Plan(s):*
  - FY08-09 Strategic Plan for Data Storage and Caching
  - Strategic Plan for Scientific Facilities (2007-2009)
- *Tactical Plan Leader:* Alexander Moibenko
- *Organizational Unit home:* Scientific Facilities
- *Tactical Plan Goals*
  - Provide feature development, integration and support of Tape based multi Petabyte mass storage system for Fermilab, HEP, and other collaborators in order to meet the expanding requirements of these collaborations.

# Activities Summary: FTEs

	Personnel Usage (FTEs)							
			<u>Allocation</u>			<u>Actual YTD</u>		
	<b>Tactical Plan</b>							
	Level 1 Activity							
			FTE-yrs	FTE-mos	FTE-yrs (Ave/mo)	FTE-mos (7 mo)	% consumed sans other contributors	
						% consumed YTD		
	<b>enstore</b>							
		Dailly Tasks	0.20	2.4	0.28	1.94	80.83	80.83
		Distributed Tape Operation	0.88	10.6	1.24	8.71	82.17	82.17
		Documentation	0.20	2.4	0.11	0.76	31.67	31.67
		Collaboration	0.35	4.2	0.12	0.82	19.52	19.52
		Product Support	0.55	6.6	0.54	3.76	56.97	56.97
		Monitoring Tools	0.10	1.2	0.22	1.53	127.50	127.50
		New Technology	0.10	1.2	0.14	1.01	84.17	0.00
		Packaging	0.40	4.8	0.24	1.65	34.38	34.38
		pnfs scans	0.10	1.2	0.08	0.56	46.67	46.67
		Project Leadership	0.23	2.76	0.06	0.44	15.94	
		Project Management	0.15	1.8	0.11	0.77	42.78	36.11
		Workflow support	0.20	2.4	0.13	0.94	39.17	39.17
		New libraries	0.09	1.1	0.00	0	0.00	0.00
		Small files	0.12	1.44	0.00	0	0.00	0.00
	Total		3.68	44.1	3.27	22.89	51.90	49.34

# Project Activity: Small Projects

*Small additions to existing system, including monitoring, future projects, env*

## *Original Goals Related to this Activity*

1. *Provide Enstore feature additions and modifications required by strategic goals, operations.*

– **ONGOING**

- Key Milestones
  - None
- Issues and Risks (specific to this activity, includes budget impact)
  - Level of service

## *Adjusted Goals Related to this Activity*

1. *Same*

# Project Activity: ENCP

*Modifications, feature additions, new releases.*

## *Original Goals Related to this Activity*

1. *Provide Enstore feature additions and modifications required by strategic goals, operations.*

– **ONGOING**

- Key Milestones
  - encp product cuts
- Issues and Risks (specific to this activity, includes budget impact)
  - problems with data delivery
  - Level of service

## *Adjusted Goals Related to this Activity*

1. *Same*

# Project Activity: Support of Automated pnfs scans

*Provide scan reports and fix problems.*

## *Original Goals Related to this Activity*

1. *Provide developers support of existing production Enstore systems.*

– **ONGOING**

- Key Milestones
  - hand over to administrative support
- Issues and Risks (specific to this activity, includes budget impact)
  - Level of staffing (in SSA), level of service

## *Adjusted Goals Related to this Activity*

1. *Same*

# Project Activity: Workflow support

*Includes modifications of DB to contain necessary parameters for metrics.*

## *Original Goals Related to this Activity*

1. *Provide developers support of existing production Enstore systems.*

– **ONGOING**

- Key Milestones
  - N/A
- Issues and Risks (specific to this activity, includes budget impact)
  - Level of service

## *Adjusted Goals Related to this Activity*

1. *Same*

# Project Activity: Documentation

*modifications and additions to Enstore documents for all categories of users*

## *Original Goals Related to this Activity*

1. *Provide developers support of existing production Enstore systems.*

### *– ONGOING*

- Key Milestones
  1. New releases
  2. User documentation updated *Done*
  3. Administration documentation. *In progress*
- Issues and Risks (specific to this activity, includes budget impact)
  - Level of service

## *Adjusted Goals Related to this Activity*

1. *Same*



# Project Activity: Small Files

*Participate in design of small files support in enstore along with dCache in collaboration with PIC (Barcelona, Spain)*

## *Original Goals Related to this Activity*

1. *Provide Enstore feature additions and modifications required by strategic goals, operations.*

## **– NOT STARTED**

- Key Milestones

1. Small file aggregation in dCache/enstore. **Not done.**

- Issues and Risks (specific to this activity, includes budget impact)

- This project is intended to reduce the impact on storage resources from users writing small files. Small files have large performance overheads.
- Over the life of files they all become small comparing to the capacity of the new media. Migration of files to new media becomes an issue.
- Level of service, protracted migration.

## *Adjusted Goals Related to this Activity*

1. *Same*

# Project Activity: New Technology support

*Newer OS, 64 bit processor architecture, new tape drives*

## *Original Goals Related to this Activity*

1. *Provide developers support of existing production Enstore systems.*

### **– ONGOING**

- Key Milestones
  1. Release of modified tape tools for new types of drives. **In progress**
  2. Release of enstore and related products for newer OS and processor architectures. **In progress**
- Issues and Risks (specific to this activity, includes budget impact)
  - problems to keep up with increasing storage demand
  - Level of service

## *Adjusted Goals Related to this Activity*

1. *Same*

# Project Activity: New Library Support

*Support of new robotic libraries incl. code modifications and commissioning*

## *Original Goals Related to this Activity*

1. *Provide support of new tape technologies and OS upgrades.*

– ONGOING

## *Adjusted Goals Related to this Activity*

1. *Same*

- Key Milestones
  - Ongoing
- Issues and Risks (specific to this activity, includes budget impact)
  - mission failure

# Project Activity: Externally deployable Enstore

*Packaging Enstore for external distribution, particularly to PIC*

## *Original Goals Related to this Activity*

1. *Provide Enstore packaging and installation support.*

– COMPLETE

2. *Establish multi-institutional Enstore Collaboration.*

– COMPLETE

## *Adjusted Goals Related to this Activity*

1. *Same*

2. *Same*

- Key Milestones

- 1. Delivery of enstore to PIC. **Completed**

- 2. Collaborate with PIC to support IBM tape library support. **Complete**

- Issues and Risks (specific to this activity, includes budget impact)

- Level of service, external agreements not met

# Project Activity: Migration

*Support and feature additions to automigration tools*

## *Original Goals Related to this Activity*

1. *Provide developers support of existing production Enstore systems.*

## *Adjusted Goals Related to this Activity*

1. *Same*

### • Key Milestones

1. Establish software to efficiently migrate to new media, including by duplication of file to different media in different libraries. **Complete but performance problems are still being addressed.**

### • Issues and Risks (specific to this activity, includes budget impact)

- Need to migrate data off of legacy media for 1. Decommissioning older technology 2. Doing so before the technology EOSL 3. Squeezing partially filled tapes.
- Need to migrate ~ 1 PB of LTO-2, and 4 PB of 9940A/B at a rate of about 2PB/yr.
- Risk if not done is loss of data

# Project Activity: Packaging and Installation

*Enstore packaging and installation support on existing and new hardware*

## *Original Goals Related to this Activity*

1. *Provide Enstore packaging and installation support*
  - Ongoing

## *Adjusted Goals Related to this Activity*

1. *Same*

## Key Milestones

- *Deploy enstore as an rpm. Complete*
- *Provide new releases and critical updates Ongoing*

Issues and Risks (specific to this activity, includes budget impact)

- *performance problems*

# Project Activity: Distributed Tape Operations

*Includes installation, configuration, relocation of enstore servers and OS services (SDE), development of tools to support distributed operations*

## *Original Goals Related to this Activity*

1. Integrate existing Enstore systems into one for sharing storage libraries, movers and other resources. Reduce amount of equipment

– **ONGOING**

## *Adjusted Goals Related to this Activity*

1. Same

### Key Milestones

- *Upgrade the three enstore instances to SDE enstore. All but stken complete.*
- *Enstore that can share drives between stakeholders. Not started.*

Issues and Risks (specific to this activity, includes budget impact)

- *Not keeping up with storage demand & performance requirements*
- *Inefficient use of drives resulting in acquisition of more drives*

# Service Activity: Daily Tasks



*Day to day SSA and experiments support*

*Adjusted Goals Related to this Activity*

1. *Support operations and users of the systems*
  - Ongoing

*Adjusted Goals Related to this Activity*

1. *Same*

Key Metrics

- *Minimize unplanned and planned service outages*

Issues and Risks (specific to this activity, includes budget impact)

- *level of service*



# Tactical Plan Issues and Risks



- *Resolution of Past Action Items*
  - None
- *Issues and Risks (+ impact of FY08 DOE/FNAL budget)*
  - Level of staffing is low and impacts project completion
  - Enstore is a central mass storage system for needs of all Fermilab users and US CMS Tier 1 Site. Enstore is a mature system. There is a slight risk of not providing a required capacities and rates. Deploying a new hardware and improving a scalability of Enstore components allows to mitigate this risk.
  - Not providing Enstore feature additions and modifications required by strategic goals and operations may lead to reduced functionality of the system. Lack of manpower may aggravate this risk. Risk is low.
  - ***If support of new storage technologies and OS upgrades are not provided the systems parameters will degrade.***